



"STEWARDSHIP IN FORESTRY"

# Timber Sale Appraisal Mor Nor Wolf

Sale FG-341-2015-19-

District: Forest Grove

Date: February 12, 2015

## Cost Summary

|                         | Conifer        | Hardwood          | Total          |
|-------------------------|----------------|-------------------|----------------|
| Gross Timber Sale Value | \$4,414,959.32 | \$25,063.20       | \$4,440,022.52 |
|                         |                | Project Work:     | (\$128,590.00) |
|                         |                | Advertised Value: | \$4,311,432.52 |



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## Timber Description

**Location:** Portions of Section 31, T4N, R5W, W.M.,  
Columbia County, Oregon, and portions of Section 36, T4N, R6W, W.M., Clatsop County, Oregon.

**Stand Stocking:** 20%

| Specie Name   | AvgDBH | Amortization (%) | Recovery (%) |
|---------------|--------|------------------|--------------|
| Douglas - Fir | 22     | 0                | 98           |
| Alder (Red)   | 13     | 0                | 98           |

| Volume by Grade | 2S    | 3S    | 4S  | Camprun | Total |
|-----------------|-------|-------|-----|---------|-------|
| Douglas - Fir   | 6,550 | 1,908 | 168 | 0       | 8,626 |
| Alder (Red)     | 0     | 0     | 0   | 59      | 59    |
| <b>Total</b>    | 6,550 | 1,908 | 168 | 59      | 8,685 |

**Comments:** Pond Values Used: 4rd Quarter Calendar Year 2014.

Western Hemlock and Other Conifers Stumpage Price = Pond Value minus Logging Cost:  
 $\$333.24/\text{MBF} = \$515/\text{MBF} - \$181.76/\text{MBF}$

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:  
 $\$993.24/\text{MBF} = \$1,175/\text{MBF} - \$181.76/\text{MBF}$

SCALING COST ALLOWANCE = \$5.00/MBF

FUEL COST ALLOWANCE = \$3.00/Gallon

HAULING COST ALLOWANCE

Hauling costs equivalent to \$780 daily truck cost.

Other Costs (with Profit & Risk to be added):

Brand and Paint:  $8,685 \text{ MBF} \times \$2/\text{MBF} = \$17,370$

Reopen existing dirt spur: \$500

Construct non-project spur: 15 stations @ \$140/sta. = \$2,100

TOTAL Other Costs (with Profit & Risk to be added) = \$19,970

Other Costs (No Profit & Risk added):

Block/Waterbar Roads, & Skid Trails:  $20 \text{ hrs} \times \$150/\text{hour} = \$3,000$

Pile Landing Slash and Sort Firewood:  $20 \text{ hrs} \times \$150/\text{hour} = \$3,000$

Equipment Cleaning:  $4 \times \$1,000/\text{Piece} = \$4,000$

Slash Treatment:  $20 \text{ acres} \times \$200/\text{acre} = \$4,000$

Snag Felling Area - felling and road closure = \$500

Weyerhaeuser Reprod Damage Fee = \$300

Waterbar & block non-project roads: \$500

TOTAL Other Costs (No Profit & Risk added) = \$15,300

ROAD MAINTENANCE

Move-in: \$2,000

General Road Maintenance:  $3.1 \text{ miles} \times \$1,000/\text{mile} = \$3,100$

TOTAL Road Maintenance:  $\$5,100 / 8,685 \text{ MBF} = \$0.59/\text{MBF}$



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## Logging Conditions

|                          |                                                 |                                 |
|--------------------------|-------------------------------------------------|---------------------------------|
| <b>Combination#:</b> 1   | Douglas - Fir                                   | 52.58%                          |
|                          | Alder (Red)                                     | 52.44%                          |
| <b>Logging System:</b>   | Shovel                                          | <b>Process:</b> Stroke Delimber |
| <b>yarding distance:</b> | Short (400 ft)                                  | <b>downhill yarding:</b> No     |
| <b>tree size:</b>        | Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF |                                 |
| <b>loads / day:</b>      | 21                                              | <b>bd. ft / load:</b> 4600      |
| <b>cost / mbf:</b>       | \$32.84                                         |                                 |
| <b>machines:</b>         | Stroke Delimber (B)                             |                                 |

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|                          |                                                               |                                 |
|--------------------------|---------------------------------------------------------------|---------------------------------|
| <b>Combination#:</b> 2   | Douglas - Fir                                                 | 47.42%                          |
|                          | Alder (Red)                                                   | 47.56%                          |
| <b>Logging System:</b>   | Cable: Small Tower <=40                                       | <b>Process:</b> Stroke Delimber |
| <b>yarding distance:</b> | Medium (800 ft)                                               | <b>downhill yarding:</b> No     |
| <b>tree size:</b>        | Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF               |                                 |
| <b>loads / day:</b>      | 12                                                            | <b>bd. ft / load:</b> 4600      |
| <b>cost / mbf:</b>       | \$101.45                                                      |                                 |
| <b>machines:</b>         | Log Loader (A)<br>Stroke Delimber (A)<br>Tower Yarder (Small) |                                 |

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District: Forest Grove

Date: February 12, 2015

## Logging Costs

|                                    |                                       |
|------------------------------------|---------------------------------------|
| <b>Operating Seasons:</b> 2.00     | <b>Profit Risk:</b> 15%               |
| <b>Project Costs:</b> \$128,590.00 | <b>Other Costs (P/R):</b> \$19,970.00 |
| <b>Slash Disposal:</b> \$0.00      | <b>Other Costs:</b> \$15,300.00       |

**Miles of Road**

**Road Maintenance:** \$0.59

| Dirt | Rock<br>(Contractor) | Rock<br>(State) | Paved |
|------|----------------------|-----------------|-------|
| 0.0  | 0.0                  | 0.0             | 0.0   |

**Hauling Costs**

| Species       | \$ / MBF | Trips/Day | MBF / Load |
|---------------|----------|-----------|------------|
| Douglas - Fir | \$0.00   | 2.0       | 4.8        |
| Alder (Red)   | \$0.00   | 2.0       | 3.7        |



# Timber Sale Appraisal Mor Nor Wolf

Sale FG-341-2015-19-

District: Forest Grove

Date: February 12, 2015

## Logging Costs Breakdown

| Logging              | Road Maint | Fire Protect | Hauling  | Other P/R appl | Profit & Risk | Slash Disposal | Scaling | Other  | Total    |
|----------------------|------------|--------------|----------|----------------|---------------|----------------|---------|--------|----------|
| <b>Douglas - Fir</b> |            |              |          |                |               |                |         |        |          |
| \$65.38              | \$0.60     | \$1.01       | \$82.88  | \$2.30         | \$22.83       | \$0.00         | \$5.00  | \$1.76 | \$181.76 |
| <b>Alder (Red)</b>   |            |              |          |                |               |                |         |        |          |
| \$65.47              | \$0.60     | \$1.01       | \$107.52 | \$2.30         | \$26.54       | \$0.00         | \$5.00  | \$1.76 | \$210.20 |

| Specie        | Amortization | Pond Value | Stumpage | Amortized |
|---------------|--------------|------------|----------|-----------|
| Douglas - Fir | \$0.00       | \$693.58   | \$511.82 | \$0.00    |
| Alder (Red)   | \$0.00       | \$635.00   | \$424.80 | \$0.00    |



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Date: February 12, 2015

## Summary

### Amortized

| Specie        | MBF | Value  | Total  |
|---------------|-----|--------|--------|
| Douglas - Fir | 0   | \$0.00 | \$0.00 |
| Alder (Red)   | 0   | \$0.00 | \$0.00 |

### Unamortized

| Specie        | MBF   | Value    | Total          |
|---------------|-------|----------|----------------|
| Douglas - Fir | 8,626 | \$511.82 | \$4,414,959.32 |
| Alder (Red)   | 59    | \$424.80 | \$25,063.20    |

### Gross Timber Sale Value

Recovery: \$4,440,022.52

Prepared By: Mark Savage

Phone: 503-359-7437

**TIMBER SALE SUMMARY**  
**Mor Nor Wolf**  
**Contract No. 341-15-19**

1. **Location:** Portions of Section 31, T4N, R5W, W.M. Columbia County, Oregon & Portions of Section 36, T4N, R6W, W.M. Clatsop County, Oregon.
2. **Type of Sale:** This timber sale is a 183 acre Modified Clearcut with 1 acre of right-of-way. The timber will be sold on a recovery basis at a sealed bid auction.
3. **Revenue Distribution:** 100% BOF, Clatsop County 39% (8-01), Columbia County 61%.
4. **Sale Acreage:** Acres are net of stream buffers and road prisms. Acreage was determined using ESRI ArcMap GIS software.
5. **Cruise:** The Timber Sale was cruised by ODF Cruisers in November of 2014. For more information see Cruise Report.
6. **Timber Description:** The Timber Sale Area consists of medium to well stocked 67 year old Douglas-fir stands (with minor amounts of western hemlock, true firs, and hardwoods). The average "take" Douglas-fir DBH is 21 inches in Area 1 and 22 inches in Area 2. The estimated average net per acre Douglas-fir take volume in Area 1 is 39.7 Mbf, and it is 52.8 Mbf in Area 2.
7. **Topography and Logging Method:** Slopes within the sale areas range from 5% to 80% and are variable in aspect. Area 1 is 56% ground-based yarding, and 44% cable-based yarding. Area 2 is 51% ground-based yarding, and 49% cable-based logging. The average horizontal cable yarding distance in Area 1 is approximately 200 feet and the maximum is approximately feet 900. The average horizontal tractor yarding distance is approximately 400 feet and the maximum is approximately 800 feet. The average horizontal cable yarding distance in Area 2 is approximately 250 feet and the maximum is approximately 1,000 feet. The average horizontal tractor yarding distance is approximately 400 feet and the maximum is approximately 900 feet.
8. **Access:** Area 2 and the south portion of Area 1 are accessed over surfaced all-weather roads. The northern portion of Area 1 is accessed over an unsurfaced road. To get to the sale from Forest Grove, travel north on Highway 47 through Banks then merge onto Highway 26 and continue west to the North Fork Wolf Creek Road near milepost 35. Turn right on North Fork Wolf Creek Road and continue for .3 miles to the eastern portion of Area 2. Continue following this road for an additional 1.2 miles to the eastern portion of Area 1.
9. **Projects:**

|                                                 |             |
|-------------------------------------------------|-------------|
| Project No. 1: Road Construction                | \$47,765.93 |
| Project No. 2: Road Surfacing                   | \$72,449.93 |
| Project No. 3: Grass seed, fertilize, and mulch | \$1,843.79  |
| Move in and equipment cleaning:                 | \$6,529.38  |

|                                         |              |
|-----------------------------------------|--------------|
| Total Credit for all Projects (rounded) | \$128,590.00 |
|-----------------------------------------|--------------|

**PROJECT COST SUMMARY SHEET**Timber Sale: Mor Nor WolfSale Number: 341-15-19**PROJECT NO. 1: ROAD CONSTRUCTION AND IMPROVEMENT****CONSTRUCTION**

| <u>Road Segment</u> | <u>Length</u>  | <u>Cost</u> |
|---------------------|----------------|-------------|
| A to B              | 57+60          | \$22,609.99 |
| C to D              | 7+50           | \$2,063.70  |
| E to F              | 4+90           | \$1,442.62  |
| G to H              | 1+40           | \$707.39    |
|                     | 71+40 stations |             |
|                     | 1.35 miles     |             |

**SUBTOTAL CONSTRUCTION** **\$26,823.70****IMPROVEMENTS**

| <u>Road Segment</u> | <u>Length</u>   | <u>Cost</u> |
|---------------------|-----------------|-------------|
| I to J              | 160+80          | \$20,942.23 |
|                     | 160+80 stations |             |
|                     | 3.05 miles      |             |

**SUBTOTAL IMPROVEMENTS** **\$20,942.23****TOTAL PROJECT NO. 1 COST = \$47,765.93****PROJECT NO. 2: SURFACING**

| <u>Road Segment</u> | <u>Amount</u> | <u>Type</u>    | <u>Cost</u> |
|---------------------|---------------|----------------|-------------|
| A to B              | 3,521 cy      | 6"-0           | \$50,033.41 |
| C to D              | 602 cy        | 6"-0           | \$8,584.52  |
| E to F              | 446 cy        | 6"-0           | \$6,359.96  |
| G to H              | 264 cy        | 6"-0           | \$3,284.16  |
| I to J              | 300 cy        | 1 1/2" - 0     | \$2,646.00  |
| I to J              | 12 cy         | 24"-12"        | \$130.68    |
| I to J              | 160 cy        | Crusher Reject | \$1,411.20  |
| Total               | 5,305 cy      |                |             |
|                     | 300 cy        | 1 1/2" - 0     |             |
|                     | 4,833 cy      | 6"-0           |             |
|                     | 12 cy         | 24"-12"        |             |
|                     | 160 cy        | Crusher Reject |             |

**TOTAL PROJECT NO. 2 COST = \$72,449.93****PROJECT NO. 3: GRASS SEED, FERTILIZE, & MULCH****TOTAL PROJECT NO. 3 COST = \$1,843.79****MOVE IN & EQUIPMENT CLEANING**

|                                     |            |
|-------------------------------------|------------|
| Grader                              | \$573.82   |
| Loader (Move into Camp 5 Stockpile) | \$668.57   |
| Roller                              | \$636.73   |
| Excavator - Equipment Cleaning      | \$1,929.12 |
| Tractor - Equipment Cleaning        | \$1,908.64 |
| Dump Trucks                         | \$812.50   |

**TOTAL MOVE IN & EQUIPMENT CLEANING COST = \$6,529.38****TOTAL ALL PROJECTS** **\$128,589.03****TOTAL CREDITS** **\$128,590.00**

**SUMMARY OF CONSTRUCTION COST**Timber Sale: **Mor Nor Wolf**Timber Sale No. : **341-15-19**Road Segment: **A to B**Construction : **57+60** stations1.09 miles**PROJECT NO. 1****EXCAVATION**

|                                                       |       |         |            |            |                    |
|-------------------------------------------------------|-------|---------|------------|------------|--------------------|
| Clearing and Grubbing (Scatter)                       | 4.88  | acres @ | \$980.00   | per acre = | \$4,778.51         |
| Clearing and Grubbing (Endhaul 13+50 to 18+00)        | 0.92  | acres @ | \$1,377.23 | per acre = | \$1,267.05         |
| Balanced Road Construction                            | 49.60 | sta @   | \$110.00   | per sta =  | \$5,456.00         |
| Drift                                                 |       |         |            |            |                    |
| 12+00 to 13+50                                        | 1.50  | sta @   | \$180.00   | per sta =  | \$270.00           |
| 13+50 to 15+75                                        | 2.25  | sta @   | \$300.00   | per sta =  | \$675.00           |
| 49+00 to 51+00                                        | 2.00  | sta @   | \$180.00   | per sta =  | \$360.00           |
| Full Bench Endhaul Road Construction (15+75 to 18+00) |       |         |            |            |                    |
| Excavate & Load                                       | 1,066 | cy @    | \$1.15     | per cy =   | \$1,225.90         |
| Haul                                                  | 1,386 | cy @    | \$1.43     | per cy =   | \$1,981.69         |
| Compact Waste Area                                    | 1,386 | cy @    | \$0.30     | per cy =   | \$415.74           |
| Construct Turnouts (5)                                | 5     | ea @    | \$66.00    | per ea =   | \$330.00           |
| Construct Turnaround                                  | 1     | ea @    | \$82.50    | per ea =   | \$82.50            |
| Roadside Landings                                     | 2     | ea @    | \$165.00   | per ea =   | \$330.00           |
| Landing                                               | 1     | ea @    | \$314.00   | per ea =   | \$314.00           |
| Grade, Ditch, and Roll                                | 57.60 | sta @   | \$36.00    | per sta =  | \$2,073.60         |
| TOTAL EXCAVATION COSTS =                              |       |         |            |            | <b>\$19,559.99</b> |

**CULVERTS - MATERIALS & INSTALLATION****Culverts**

150 LF of 18" \$3,000.00

**Culvert Markers**5 markers \$50.00TOTAL CULVERT COSTS = **\$3,050.00****PROJECT NO. 1 TOTAL COST = \$22,609.99****PROJECT NO. 2:****SURFACING**

10 " deep = 53 cy/sta

|                   |              |       |        |   |         |          |             |
|-------------------|--------------|-------|--------|---|---------|----------|-------------|
| A to B            | 3,053        | cy of | 6" - 0 | @ | \$14.21 | per cy = | \$43,383.13 |
| Turnouts (5)      | 90           | cy of | 6" - 0 | @ | \$14.21 | per cy = | \$1,278.90  |
| Turnaround        | 48           | cy of | 6" - 0 | @ | \$14.21 | per cy = | \$682.08    |
| Junction          | 20           | cy of | 6" - 0 | @ | \$14.21 | per cy = | \$284.20    |
| Roadside Landings | 160          | cy of | 6" - 0 | @ | \$14.21 | per cy = | \$2,273.60  |
| Landing           | 150          | cy of | 6" - 0 | @ | \$14.21 | per cy = | \$2,131.50  |
| <b>Total =</b>    | <u>3,521</u> |       |        |   |         |          |             |

**PROJECT NO. 2 TOTAL COST = \$50,033.41****PROJECT NO. 3:**

|                                                   |       |         |          |            |            |
|---------------------------------------------------|-------|---------|----------|------------|------------|
| Grass seed and fertilize areas of disturbed soil. | 2.44  | acres @ | \$425.00 | per acre = | \$1,036.16 |
| Mulch                                             | 10.00 | bales @ | \$8.00   | per bale = | \$80.00    |

**PROJECT NO. 3 TOTAL COST = \$1,116.16****TOTAL COST = \$73,759.56**

**SUMMARY OF CONSTRUCTION COST**Timber Sale: **Mor Nor Wolf**Timber Sale No. : **341-15-19**Road Segment: **C to D**Construction : **7+50** stations0.14 miles**PROJECT NO. 1****EXCAVATION**

|                                 |      |         |          |            |          |
|---------------------------------|------|---------|----------|------------|----------|
| Clearing and Grubbing (Scatter) | 0.52 | acres @ | \$980.00 | per acre = | \$506.20 |
| Balanced Road Construction      | 7.50 | sta @   | \$110.00 | per sta =  | \$825.00 |
| Construct Turnout               | 1    | ea @    | \$66.00  | per ea =   | \$66.00  |
| Construct Turnaround            | 1    | ea @    | \$82.50  | per ea =   | \$82.50  |
| Landing                         | 1    | ea @    | \$314.00 | per ea =   | \$314.00 |
| Grade, Ditch, and Roll          | 7.50 | sta @   | \$36.00  | per sta =  | \$270.00 |

TOTAL EXCAVATION COSTS= **\$2,063.70****PROJECT NO. 1 TOTAL COST = \$2,063.70****PROJECT NO. 2:**

|            |     |          |           |   |                             |
|------------|-----|----------|-----------|---|-----------------------------|
| SURFACING  | 10  | " deep = | 53 cy/sta |   |                             |
| C to D     | 398 | cy of    | 6" - 0    | @ | \$14.26 per cy = \$5,675.48 |
| Turnout    | 18  | cy of    | 6" - 0    | @ | \$14.26 per cy = \$256.68   |
| Turnaround | 16  | cy of    | 6" - 0    | @ | \$14.26 per cy = \$228.16   |
| Junction   | 20  | cy of    | 6" - 0    | @ | \$14.26 per cy = \$285.20   |
| Landing    | 150 | cy of    | 6" - 0    | @ | \$14.26 per cy = \$2,139.00 |

Total =

602

**PROJECT NO. 2 TOTAL COST = \$8,584.52****PROJECT NO. 3:**

Grass seed and fertilize areas of disturbed soil. 0.26 acres @ \$425.00 per acre = \$109.76

**PROJECT NO. 3 TOTAL COST = \$109.76****TOTAL COST = \$10,757.98**

## SUMMARY OF CONSTRUCTION COST

Timber Sale: **Mor Nor Wolf**

Timber Sale No. : **341-15-19**

Road Segment: **E to F**

Construction : **4+90** stations  
**0.09** miles

### PROJECT NO. 1

#### EXCAVATION

|                                 |      |         |          |            |                   |
|---------------------------------|------|---------|----------|------------|-------------------|
| Clearing and Grubbing (Scatter) | 0.34 | acres @ | \$980.00 | per acre = | \$330.72          |
| Balanced Road Construction      | 4.90 | sta @   | \$110.00 | per sta =  | \$539.00          |
| Construct Turnaround            | 1    | ea @    | \$82.50  | per ea =   | \$82.50           |
| Landing                         | 1    | ea @    | \$314.00 | per ea =   | \$314.00          |
| Grade, Ditch, and Roll          | 4.90 | sta @   | \$36.00  | per sta =  | \$176.40          |
| TOTAL EXCAVATION COSTS=         |      |         |          |            | <b>\$1,442.62</b> |

**PROJECT NO. 1 TOTAL COST = \$1,442.62**

### PROJECT NO. 2:

#### SURFACING

|            |     |          |           |   |                  |            |
|------------|-----|----------|-----------|---|------------------|------------|
|            | 10  | " deep = | 53 cy/sta |   |                  |            |
| E to F     | 260 | cy of    | 6" - 0    | @ | \$14.26 per cy = | \$3,707.60 |
| Turnaround | 16  | cy of    | 6" - 0    | @ | \$14.26 per cy = | \$228.16   |
| Junction   | 20  | cy of    | 6" - 0    | @ | \$14.26 per cy = | \$285.20   |
| Landing    | 150 | cy of    | 6" - 0    | @ | \$14.26 per cy = | \$2,139.00 |
| Total =    | 446 |          |           |   |                  |            |

**PROJECT NO. 2 TOTAL COST = \$6,359.96**

### PROJECT NO. 3:

Grass seed and fertilize areas of disturbed soil. 0.17 acres @ \$425.00 per acre = \$71.71

**PROJECT NO. 3 TOTAL COST = \$71.71**

**TOTAL COST = \$7,874.29**

## SUMMARY OF CONSTRUCTION COST

|               |                     |                   |               |
|---------------|---------------------|-------------------|---------------|
| Timber Sale:  | <b>Mor Nor Wolf</b> | Timber Sale No. : | 341-15-19     |
| Road Segment: | <b>G to H</b>       | Construction :    | 1+40 stations |
|               |                     |                   | 0.03 miles    |

### PROJECT NO. 1

#### EXCAVATION

|                                 |      |         |          |            |          |
|---------------------------------|------|---------|----------|------------|----------|
| Clearing and Grubbing (Scatter) | 0.06 | acres @ | \$980.00 | per acre = | \$62.99  |
| Balanced Road Construction      | 1.40 | sta @   | \$110.00 | per sta =  | \$154.00 |
| Landing                         | 1    | ea @    | \$314.00 | per ea =   | \$314.00 |
| Grade, Ditch, and Roll          | 4.90 | sta @   | \$36.00  | per sta =  | \$176.40 |

**PROJECT NO. 1 TOTAL COST = \$707.39**

### PROJECT NO. 2:

|                |     |          |           |   |                  |            |
|----------------|-----|----------|-----------|---|------------------|------------|
| SURFACING      | 10  | " deep = | 53 cy/sta |   |                  |            |
| G to H         | 74  | cy of    | 6" - 0    | @ | \$12.44 per cy = | \$920.56   |
| Junction       | 40  | cy of    | 6" - 0    | @ | \$12.44 per cy = | \$497.60   |
| Landing        | 150 | cy of    | 6" - 0    | @ | \$12.44 per cy = | \$1,866.00 |
| <b>Total =</b> | 264 |          |           |   |                  |            |

**PROJECT NO. 2 TOTAL COST = \$3,284.16**

### PROJECT NO. 3:

|                                                   |      |         |          |            |         |
|---------------------------------------------------|------|---------|----------|------------|---------|
| Grass seed and fertilize areas of disturbed soil. | 0.03 | acres @ | \$425.00 | per acre = | \$13.66 |
|---------------------------------------------------|------|---------|----------|------------|---------|

**PROJECT NO. 3 TOTAL COST = \$13.66**

**TOTAL COST = \$4,005.21**

**SUMMARY OF CONSTRUCTION COST**

Timber Sale: **Mor Nor Wolf**  
Road Segment: **I to J**

Timber Sale No. : **341-15-19**  
Improvement : **160+80** stations  
**3.05** miles

**PROJECT NO. 1****EXCAVATION**

|                                              |        |       |         |           |                    |
|----------------------------------------------|--------|-------|---------|-----------|--------------------|
| Clean Ditch                                  | 113.10 | sta @ | \$12.41 | per sta = | \$1,403.57         |
| Endhaul (Cutbank widening & Culvert No. 18.) |        |       |         |           |                    |
| Excavate & Load                              | 1,070  | cy @  | \$1.15  | per cy =  | \$1,230.50         |
| Haul                                         | 1,391  | cy @  | \$1.16  | per cy =  | \$1,613.56         |
| Place Fill                                   | 465    | cy @  | \$2.40  | per cy =  | \$1,116.00         |
| Compact Fill                                 | 465    | cy @  | \$0.50  | per cy =  | \$232.50           |
| Compact Waste Area                           | 1,391  | cy @  | \$0.30  | per cy =  | \$417.30           |
| Grade, Ditch, and Roll                       | 160.80 | sta @ | \$36.00 | per sta = | \$5,788.80         |
| TOTAL EXCAVATION COSTS=                      |        |       |         |           | <b>\$11,802.23</b> |

**CULVERTS - MATERIALS & INSTALLATION****Culverts**

442 LF of 18" \$8,840.00

**Culvert Markers**

30 markers \$300.00

TOTAL CULVERT COSTS = **\$9,140.00**

**PROJECT NO. 1 TOTAL COST = \$20,942.23**

**PROJECT NO. 2:****SURFACING**

|                         |     |          |                |   |                            |
|-------------------------|-----|----------|----------------|---|----------------------------|
|                         | 8   | " deep = | 42 cy/sta      |   |                            |
| Surfacing Over Culverts | 300 | cy of    | 1 1/2" - 0     | @ | \$8.82 per cy = \$2,646.00 |
| Culvert Bedding         | 160 | cy of    | Crusher Rejec  | @ | \$8.82 per cy = \$1,411.20 |
| Riprap                  | 12  | cy of    | 24" - 12"      | @ | \$10.89 per cy = \$130.68  |
| Total =                 | 472 |          |                |   |                            |
|                         | 300 | cy of    | 1 1/2" - 0     |   | \$8.82 per cy = \$2,646.00 |
|                         | 12  | cy of    | 24" - 12"      |   | \$10.89 per cy = \$130.68  |
|                         | 160 | cy of    | Crusher Reject |   | \$8.82 per cy = \$1,411.20 |

**PROJECT NO. 2 TOTAL COST = \$4,187.88**

**PROJECT NO. 3:**

|                                                   |               |          |            |          |
|---------------------------------------------------|---------------|----------|------------|----------|
| Grass seed and fertilize areas of disturbed soil. | 0.50 acres @  | \$425.00 | per acre = | \$212.50 |
| Mulch                                             | 40.00 bales @ | \$8.00   | per bale = | \$320.00 |

**PROJECT NO. 3 TOTAL COST = \$532.50**

**TOTAL COST = \$25,662.61**

## ROCK DEVELOPMENT COST SUMMARY

Timber Sale: Mor Nor Wolf

Sale Number: 341-15-19

Pit Name: Lower Rock Creek Pit

|             |             |                         |                 |
|-------------|-------------|-------------------------|-----------------|
| Swell:      | <u>1.30</u> | Pit Run (trk measure)   | <u>5,305 cy</u> |
| Shrinkage:  | <u>1.16</u> | Total Truck Yardage:    | <u>5,305 cy</u> |
| Drill Pct.: | <u>100%</u> | Total In Place Yardage: | <u>4,081 cy</u> |

|                           |                     |                 |   |             |
|---------------------------|---------------------|-----------------|---|-------------|
| Scalp & Clear Overburden: |                     |                 |   | \$775.00    |
| Rip Rock:                 | <u>\$2.10</u> /cy x | <u>4,081</u> cy | = | \$8,569.62  |
| Push Rock:                | <u>\$0.80</u> /cy x | <u>5,305</u> cy | = | \$4,244.00  |
| Load Dump Truck:          | <u>\$0.80</u> /cy x | <u>5,305</u> cy | = | \$4,244.00  |
|                           |                     | Subtotal        |   | \$17,832.62 |

|                    |            |
|--------------------|------------|
| Equipment Cleaning | \$1,000.00 |
| Move in Excavator  | \$929.12   |
| Clean Up Pit       | \$875.00   |
| Subtotal           | \$2,804.12 |

|                         |                  |                       |                    |
|-------------------------|------------------|-----------------------|--------------------|
| ROCK DEVELOPMENT COST = | <u>\$3.89/cy</u> | TOTAL PRODUCTION COST | <u>\$20,636.74</u> |
|-------------------------|------------------|-----------------------|--------------------|

**CRUISE REPORT**  
**Mor Nor Wolf**  
**341-15-19**

**1. LOCATION:**

Portions of Section 31, T4N, R5W, W.M., Columbia County, Oregon. Portions of Section 36, T4N, R6W, W.M., Clatsop County, Oregon.

**2. CRUISE DESIGN:**

The cruise design assumed a Coefficient of Variation (CV%) of 75%, an average stand diameter of 20 inches, a desired sampling error (SE%) of 11% and a minimum sample size of 100 grade trees. Pre-cruise plots indicated that approximately 5-6 trees per plot could be realized with a 40 BAF prism.

**3. SAMPLING METHOD:**

The Sale Area was cruised in November 2014 with 29 variable radius grade plots and 27 variable radius count plots using a 40 BAF prism. In Area 1 the plots were laid out on a 4 chain x 5 chain grid. In Area 2 the plots were laid out on a 4 chain x 7 chain grid. Plots falling on or near existing roads or no-harvest areas were offset 1 chain.

**4. CRUISE RESULTS**

160 trees were measured and graded producing a cumulative Basal Area sampling error of 5.8% and 6% on the Board Foot Volume.

**5. TREE MEASUREMENT AND GRADING:**

All grade plot sample trees were measured and graded following Columbia River Log Scale grade rules and favoring 40 foot segments.

All grade plot 'Take' trees were measured and graded following Columbia River Log Scale grade rules and favoring 40 foot segments.

a) **Height Standards:**

Total tree heights were measured to the nearest foot. Bole heights were calculated to a six inch top.

b) **Diameter Standards:** Diameters were measured outside bark at breast height to the nearest inch.

c) **Form Factors** were measured for each grade tree using a form point of 16 feet.

**5. DATA PROCESSING**

a) **Volumes and Statistics**, Cruise and volume estimates, and sampling statistics, were derived from Super Ace 2008 cruise software.

b) **Deductions:** Two percent of the volume was subtracted from the computed volumes to account for hidden defect and breakage.

**6. Cruisers:** The sale was cruised by ODF cruisers Mark C. Savage and Joe P. Koch.

Prepared by:

\_\_\_\_\_  
Mark Savage

\_\_\_\_\_  
Date

Reviewed by:

\_\_\_\_\_  
Eric Foucht

\_\_\_\_\_  
Date

| T                      | Species, Sort Grade - Board Foot Volumes (Type) |        |                  |                  |        |                |                  |                               |      |            |     |    |     |     | Page | 1                   |           |       |       |                      |
|------------------------|-------------------------------------------------|--------|------------------|------------------|--------|----------------|------------------|-------------------------------|------|------------|-----|----|-----|-----|------|---------------------|-----------|-------|-------|----------------------|
| Project: MORNOR        |                                                 |        |                  |                  |        |                |                  |                               |      |            |     |    |     |     |      | Date                | 1/7/2015  |       |       |                      |
|                        |                                                 |        |                  |                  |        |                |                  |                               |      |            |     |    |     |     |      | Time                | 2:30:06PM |       |       |                      |
| T04N R05W S31 T00MC    |                                                 |        |                  |                  |        |                |                  |                               |      |            |     |    |     |     |      | T04N R05W S31 T00MC |           |       |       |                      |
| Twp                    | Rge                                             | Sec    | Tract            | Type             | Acres  | Plots          | Sample Trees     | CuFt                          | BdFt |            |     |    |     |     |      |                     |           |       |       |                      |
| 04N                    | 05W                                             | 31     | 00A1             | 00MC             | 70.00  | 22             | 60               | S                             | W    |            |     |    |     |     |      |                     |           |       |       |                      |
| S So Gr<br>Spp T rt ad |                                                 |        | %<br>Net<br>BdFt | Bd. Ft. per Acre |        |                | Total<br>Net MBF | Percent Net Board Foot Volume |      |            |     |    |     |     |      | Average Log         |           |       |       | Logs<br>Per<br>/Acre |
|                        |                                                 |        | Def%             | Gross            | Net    | Log Scale Dia. |                  |                               |      | Log Length |     |    |     | Ln  | Dia  | Bd                  | CF/<br>Lf |       |       |                      |
| 4-5                    | 6-11                                            | 12-16  | 17+              | 12-20            | 21-30  | 31-35          | 36-99            | Ft                            | In   | Ft         |     |    |     |     |      |                     |           |       |       |                      |
| DF                     | T                                               | 2M     | 74               | 2.3              | 30,185 | 29,496         | 2,065            | 61                            | 39   |            |     |    | 100 | 40  | 15   | 348                 | 1.85      | 84.7  |       |                      |
| DF                     | T                                               | 3M     | 23               | 1.0              | 9,323  | 9,230          | 646              | 100                           |      |            |     | 1  | 14  | 85  | 38   | 8                   | 98        | 0.67  | 94.6  |                      |
| DF                     | T                                               | 4M     | 3                | 1.4              | 999    | 985            | 69               | 100                           |      |            | 59  | 41 |     |     | 18   | 6                   | 21        | 0.36  | 47.6  |                      |
| DF                     | T                                               | Totals | 96               | 2.0              | 40,508 | 39,711         | 2,780            | 26                            | 46   | 29         | 1   | 1  | 3   | 94  | 35   | 10                  | 175       | 1.15  | 226.9 |                      |
| DF                     | L                                               | 2M     | 100              |                  | 683    | 683            | 48               | 100                           |      |            | 2   |    |     | 98  | 34   | 34                  | 2438      | 11.63 | .3    |                      |
| DF                     | L                                               | Totals | 2                |                  | 683    | 683            | 48               | 100                           |      |            | 2   |    |     | 98  | 34   | 34                  | 2438      | 11.63 | .3    |                      |
| WH                     | L                                               | 2M     | 71               |                  | 467    | 467            | 33               | 100                           |      |            |     |    |     | 100 | 40   | 14                  | 323       | 1.83  | 1.4   |                      |
| WH                     | L                                               | 3M     | 26               |                  | 171    | 171            | 12               | 100                           |      |            |     |    |     | 100 | 40   | 9                   | 119       | 0.79  | 1.4   |                      |
| WH                     | L                                               | 4M     | 3                |                  | 14     | 14             | 1                | 100                           |      |            | 100 |    |     |     | 18   | 6                   | 20        | 0.37  | .7    |                      |
| WH                     | L                                               | Totals | 2                |                  | 652    | 652            | 46               | 28                            | 72   |            | 2   |    |     | 98  | 36   | 11                  | 182       | 1.22  | 3.6   |                      |
| RA                     | T                                               | R      | 100              |                  | 221    | 221            | 15               | 100                           |      |            | 31  | 23 | 46  |     | 19   | 8                   | 32        | 0.64  | 6.8   |                      |
| RA                     | T                                               | Totals | 1                |                  | 221    | 221            | 15               | 100                           |      |            | 31  | 23 | 46  |     | 19   | 8                   | 32        | 0.64  | 6.8   |                      |
| Type Totals            |                                                 |        |                  | 1.9              | 42,064 | 41,267         | 2,889            | 26                            | 45   | 29         | 2   | 1  | 3   | 94  | 34   | 10                  | 174       | 1.15  | 237.6 |                      |

| TC TLOGSTVB         |     |     |        | Log Stock Table - MBF<br>Project: MORNOR |       |       |              |       |                                          |                    |           |     |     |     |     |     |       |       |       |
|---------------------|-----|-----|--------|------------------------------------------|-------|-------|--------------|-------|------------------------------------------|--------------------|-----------|-----|-----|-----|-----|-----|-------|-------|-------|
| T04N R05W S31 T00MC |     |     |        |                                          |       |       |              |       |                                          | T04N R05W S31 T00M |           |     |     |     |     |     |       |       |       |
| Twp                 | Rge | Sec | Tract  | Type                                     | Acres | Plots | Sample Trees | Page  | 1                                        |                    |           |     |     |     |     |     |       |       |       |
| 04N                 | 05W | 31  | 00A1   | 00MC                                     | 70.00 | 22    | 60           | Date  | 1/7/2015                                 |                    |           |     |     |     |     |     |       |       |       |
|                     |     |     |        |                                          |       |       |              |       |                                          | Time               | 2:30:07PM |     |     |     |     |     |       |       |       |
| Spp                 | S   | So  | Gr     | Log                                      | Gross | %     | Net          | %     | Net Volume by Scaling Diameter in Inches |                    |           |     |     |     |     |     |       |       |       |
|                     |     |     |        |                                          |       |       |              |       | MBF                                      | Def                | MBF       | Spc | 2-3 | 4-5 | 6-7 | 8-9 | 10-11 | 12-13 | 14-15 |
| DF                  | L   |     | 2M     | 14                                       | 1     |       | 1            | .0    |                                          |                    |           |     |     |     | 1   |     |       |       |       |
| DF                  | L   |     | 2M     | 40                                       | 47    |       | 47           | 1.7   |                                          |                    |           |     |     |     |     |     | 6     |       | 41    |
| DF                  | T   |     | 2M     | 40                                       | 2,113 | 2.3   | 2,065        | 73.0  |                                          |                    |           |     | 467 | 611 | 802 | 185 |       |       |       |
| DF                  | T   |     | 3M     | 26                                       | 2     |       | 2            | .1    |                                          |                    |           | 2   |     |     |     |     |       |       |       |
| DF                  | T   |     | 3M     | 28                                       | 3     |       | 3            | .1    |                                          |                    | 3         |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 3M     | 32                                       | 41    |       | 41           | 1.4   |                                          |                    | 41        |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 3M     | 34                                       | 51    |       | 51           | 1.8   |                                          |                    | 25        | 26  |     |     |     |     |       |       |       |
| DF                  | T   |     | 3M     | 36                                       | 4     |       | 4            | .1    |                                          |                    |           | 4   |     |     |     |     |       |       |       |
| DF                  | T   |     | 3M     | 38                                       | 6     |       | 6            | .2    |                                          |                    | 6         |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 3M     | 40                                       | 546   | 1.2   | 540          | 19.1  |                                          |                    | 81        | 197 | 261 |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 12                                       | 11    |       | 11           | .4    |                                          |                    | 11        |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 14                                       | 4     |       | 4            | .1    |                                          |                    | 4         |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 16                                       | 11    |       | 11           | .4    |                                          |                    | 11        |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 18                                       | 10    |       | 10           | .3    |                                          |                    | 6         | 4   |     |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 20                                       | 5     |       | 5            | .2    |                                          |                    | 5         |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 22                                       | 5     | 19.4  | 4            | .1    |                                          |                    | 4         |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 24                                       | 5     |       | 5            | .2    |                                          |                    | 5         |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 26                                       | 7     |       | 7            | .2    |                                          |                    | 7         |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 28                                       | 7     |       | 7            | .3    |                                          |                    | 7         |     |     |     |     |     |       |       |       |
| DF                  | T   |     | 4M     | 30                                       | 5     |       | 5            | .2    |                                          |                    | 5         |     |     |     |     |     |       |       |       |
| DF                  |     |     | Totals |                                          | 2,883 | 1.9   | 2,828        | 97.9  |                                          |                    | 222       | 232 | 261 | 467 | 611 | 803 | 185   | 6     | 41    |
| WH                  | L   |     | 2M     | 40                                       | 33    |       | 33           | 71.6  |                                          |                    |           |     |     | 33  |     |     |       |       |       |
| WH                  | L   |     | 3M     | 40                                       | 12    |       | 12           | 26.3  |                                          |                    |           | 5   | 7   |     |     |     |       |       |       |
| WH                  | L   |     | 4M     | 18                                       | 1     |       | 1            | 2.1   |                                          |                    | 1         |     |     |     |     |     |       |       |       |
| WH                  |     |     | Totals |                                          | 46    |       | 46           | 1.6   |                                          |                    | 1         | 5   | 7   | 33  |     |     |       |       |       |
| RA                  | T   |     | R      | 2                                        |       |       |              |       |                                          |                    |           |     |     |     |     |     |       |       |       |
| RA                  | T   |     | R      | 18                                       | 5     |       | 5            | 30.8  |                                          |                    |           | 5   |     |     |     |     |       |       |       |
| RA                  | T   |     | R      | 21                                       | 4     |       | 4            | 23.1  |                                          |                    | 4         |     |     |     |     |     |       |       |       |
| RA                  | T   |     | R      | 34                                       | 7     |       | 7            | 46.2  |                                          |                    | 7         |     |     |     |     |     |       |       |       |
| RA                  |     |     | Totals |                                          | 15    |       | 15           | .5    |                                          |                    | 11        | 5   |     |     |     |     |       |       |       |
| Total All Species   |     |     |        |                                          | 2,944 | 1.9   | 2,889        | 100.0 |                                          |                    | 233       | 241 | 269 | 467 | 643 | 803 | 185   | 6     | 41    |

| TC                  |   | TSTNDSUM |       |           |                 |                |             |              |               |               |               |                       |                       |             |              |       | Stand Table Summary |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------|---|----------|-------|-----------|-----------------|----------------|-------------|--------------|---------------|---------------|---------------|-----------------------|-----------------------|-------------|--------------|-------|---------------------|-------|-----------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|                     |   |          |       |           |                 |                |             |              |               |               |               |                       |                       |             |              |       | Project             |       |           | MORNOR     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T04N R05W S31 T00MC |   |          |       |           |                 |                |             |              |               |               |               |                       |                       |             |              |       | T04N R05W S31 T00MC |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Twp                 |   | Rge      |       | Sec       |                 | Tract          |             | Type         |               |               | Acres         |                       | Plots                 |             | Sample Trees |       |                     | Page: |           | 1          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 04N                 |   | 05W      |       | 31        |                 | 00A1           |             | 00MC         |               |               | 70.00         |                       | 22                    |             | 60           |       |                     | Date: |           | 01/07/2015 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                     |   |          |       |           |                 |                |             |              |               |               |               |                       |                       |             |              |       | Time:               |       | 2:30:06PM |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Spc                 | T | Sample   |       | FF<br>16' | Av<br>Ht<br>Tot | Trees/<br>Acre | BA/<br>Acre | Logs<br>Acre | Average Log   |               | Tons/<br>Acre | Net<br>Cu.Ft.<br>Acre | Net<br>Bd.Ft.<br>Acre | T o t a l s |              |       |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                     |   | DBH      | Trees |           |                 |                |             |              | Net<br>Cu.Ft. | Net<br>Bd.Ft. |               |                       |                       | Tons        | Cunits       | MBF   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 10       | 1     | 88        | 89              | 6.667          | 3.64        | 13.33        | 7.1           | 35.0          | 2.68          | 94                    | 467                   | 188         | 66           | 33    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 12       | 1     | 86        | 75              | 4.630          | 3.64        | 4.63         | 18.5          | 70.0          | 2.45          | 86                    | 324                   | 171         | 60           | 23    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 15       | 2     | 88        | 110             | 5.926          | 7.27        | 11.85        | 23.0          | 100.0         | 7.77          | 273                   | 1,185                 | 544         | 191          | 83    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 16       | 2     | 88        | 134             | 5.209          | 7.27        | 15.63        | 20.4          | 93.3          | 9.10          | 319                   | 1,458                 | 637         | 224          | 102   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 18       | 3     | 88        | 133             | 6.173          | 10.91       | 18.52        | 26.4          | 110.0         | 13.93         | 489                   | 2,037                 | 975         | 342          | 143   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 19       | 2     | 88        | 117             | 3.694          | 7.27        | 9.23         | 31.9          | 132.0         | 8.40          | 295                   | 1,219                 | 588         | 206          | 85    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 20       | 5     | 85        | 129             | 8.334          | 18.18       | 23.34        | 34.1          | 139.3         | 22.66         | 795                   | 3,250                 | 1,586       | 557          | 228   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 21       | 6     | 88        | 124             | 9.071          | 21.82       | 25.70        | 35.9          | 152.9         | 26.30         | 923                   | 3,931                 | 1,841       | 646          | 275   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 22       | 8     | 89        | 126             | 11.020         | 29.09       | 31.68        | 40.9          | 180.9         | 36.93         | 1,296                 | 5,730                 | 2,585       | 907          | 401   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 23       | 2     | 89        | 146             | 2.521          | 7.27        | 7.56         | 46.6          | 208.3         | 10.04         | 352                   | 1,575                 | 702         | 246          | 110   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 24       | 4     | 88        | 147             | 4.630          | 14.55       | 15.05        | 48.2          | 222.3         | 20.66         | 725                   | 3,345                 | 1,446       | 507          | 234   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 25       | 3     | 86        | 148             | 3.200          | 10.91       | 9.60         | 56.3          | 247.8         | 15.41         | 541                   | 2,379                 | 1,079       | 378          | 167   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 26       | 3     | 88        | 153             | 2.959          | 10.91       | 8.88         | 64.8          | 315.6         | 16.39         | 575                   | 2,801                 | 1,148       | 403          | 196   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 27       | 4     | 86        | 142             | 3.658          | 14.55       | 10.97        | 64.4          | 297.5         | 20.14         | 707                   | 3,265                 | 1,410       | 495          | 229   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 28       | 4     | 86        | 131             | 3.402          | 14.55       | 10.20        | 66.2          | 290.0         | 19.25         | 676                   | 2,959                 | 1,348       | 473          | 207   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 29       | 1     | 87        | 132             | .793           | 3.64        | 2.38         | 70.5          | 343.3         | 4.78          | 168                   | 817                   | 335         | 117          | 57    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 30       | 2     | 83        | 126             | 1.482          | 7.27        | 4.44         | 70.7          | 300.0         | 8.96          | 314                   | 1,333                 | 627         | 220          | 93    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T | 32       | 2     | 87        | 136             | 1.302          | 7.27        | 3.91         | 90.3          | 418.3         | 10.06         | 353                   | 1,634                 | 704         | 247          | 114   |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  |   | Totals   |       | 55        | 87              | 124            | 84.670      | 200.00       | 226.91        | 39.6          | 175.0         | 255.91                | 8,979                 | 39,711      | 17,914       | 6,285 | 2,780               |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | L | 69       | 1     | 91        | 163             | .070           | 1.82        | .28          | 389.5         | 2437.5        | 3.11          | 109                   | 683                   | 218         | 76           | 48    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DF                  |   | Totals   |       | 1         | 91              | 163            | .070        | 1.82         | .28           | 389.5         | 2437.5        | 3.11                  | 109                   | 683         | 218          | 76    | 48                  |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WH                  | L | 21       | 1     | 86        | 111             | .756           | 1.82        | 1.51         | 48.9          | 190.0         | 2.37          | 74                    | 287                   | 166         | 52           | 20    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WH                  | L | 22       | 1     | 85        | 123             | .689           | 1.82        | 2.07         | 39.8          | 176.7         | 2.63          | 82                    | 365                   | 184         | 58           | 26    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WH                  |   | Totals   |       | 2         | 86              | 117            | 1.445       | 3.64         | 3.58          | 43.7          | 182.3         | 5.00                  | 156                   | 652         | 350          | 109   | 46                  |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| RA                  | T | 14       | 2     | 73        | 66              | 3.402          | 3.64        | 6.80         | 12.0          | 32.5          | 2.24          | 81                    | 221                   | 157         | 57           | 15    |                     |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| RA                  |   | Totals   |       | 2         | 73              | 66             | 3.402       | 3.64         | 6.80          | 12.0          | 32.5          | 2.24                  | 81                    | 221         | 157          | 57    | 15                  |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Totals              |   |          |       | 60        | 87              | 122            | 89.586      | 209.09       | 237.57        | 39.3          | 173.7         | 266.26                | 9326                  | 41,267      | 18,638       | 6,528 | 2,889               |       |           |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

| T                         |   | Species, Sort Grade - Board Foot Volumes (Type) |  |                  |                                    |        |        |                  |                               |                     |     |       |            |              |    | Page |                              | 1         |      |      |                      |       |
|---------------------------|---|-------------------------------------------------|--|------------------|------------------------------------|--------|--------|------------------|-------------------------------|---------------------|-----|-------|------------|--------------|----|------|------------------------------|-----------|------|------|----------------------|-------|
| TSPCSTGR                  |   | Project: MORNOR                                 |  |                  |                                    |        |        |                  |                               |                     |     |       |            |              |    | Date |                              | 1/7/2015  |      |      |                      |       |
|                           |   |                                                 |  |                  |                                    |        |        |                  |                               |                     |     |       |            |              |    | Time |                              | 2:35:15PM |      |      |                      |       |
| T04N R05W S31 T00MC       |   |                                                 |  |                  |                                    |        |        |                  |                               | T04N R05W S31 T00MC |     |       |            |              |    |      |                              |           |      |      |                      |       |
| Twp                       |   | Rge                                             |  | Sec              |                                    | Tract  |        | Type             |                               | Acres               |     | Plots |            | Sample Trees |    | CuFt |                              | BdFt      |      |      |                      |       |
| 04N                       |   | 05W                                             |  | 31               |                                    | 00A2   |        | 00MC             |                               | 114.00              |     | 35    |            | 100          |    | S    |                              | W         |      |      |                      |       |
| S So Gr<br>T rt ad<br>Spp |   |                                                 |  | %<br>Net<br>BdFt | Bd. Ft. per Acre<br>Def% Gross Net |        |        | Total<br>Net MBF | Percent Net Board Foot Volume |                     |     |       |            |              |    |      | Average Log                  |           |      |      | Logs<br>Per<br>/Acre |       |
|                           |   |                                                 |  |                  |                                    |        |        |                  | Log Scale Dia.                |                     |     |       | Log Length |              |    |      | Ln Dia Bd CF/<br>Ft In Ft Lf |           |      |      |                      |       |
| DF                        | T | CU                                              |  |                  |                                    |        |        |                  |                               |                     |     |       |            |              |    |      |                              |           |      | .3   |                      |       |
| DF                        | T | 2M                                              |  | 76               | 1.0                                | 40,903 | 40,510 | 4,618            |                               |                     | 53  | 47    | 1          | 1            |    | 98   | 40                           | 16        | 397  | 1.99 | 102.1                |       |
| DF                        | T | 3M                                              |  | 22               | .2                                 | 11,428 | 11,409 | 1,301            |                               |                     | 97  | 3     |            | 0            | 10 | 90   | 38                           | 8         | 102  | 0.68 | 111.5                |       |
| DF                        | T | 4M                                              |  | 2                |                                    | 897    | 897    | 102              |                               |                     | 100 |       |            | 41           | 59 |      | 20                           | 6         | 25   | 0.36 | 36.6                 |       |
| DF                        | T | Totals                                          |  | 99               | .8                                 | 53,227 | 52,815 | 6,021            |                               |                     | 23  | 41    | 36         | 1            | 2  | 2    | 95                           | 36        | 11   | 211  | 1.24                 | 250.5 |
| DF                        | L | 2M                                              |  | 100              |                                    | 326    | 326    | 37               |                               |                     | 5   | 95    |            |              |    | 100  | 39                           | 25        | 1247 | 5.84 | .3                   |       |
| DF                        | L | Totals                                          |  | 1                |                                    | 326    | 326    | 37               |                               |                     | 5   | 95    |            |              |    | 100  | 39                           | 25        | 1247 | 5.84 | .3                   |       |
| RA                        | T | R                                               |  | 100              |                                    | 331    | 331    | 38               |                               |                     | 100 |       |            | 13           | 60 | 27   | 14                           | 7         | 33   | 0.78 | 10.0                 |       |
| RA                        | T | Totals                                          |  | 1                |                                    | 331    | 331    | 38               |                               |                     | 100 |       |            | 13           | 60 | 27   | 14                           | 7         | 33   | 0.78 | 10.0                 |       |
| Type Totals               |   |                                                 |  |                  | .8                                 | 53,885 | 53,473 | 6,096            |                               |                     | 23  | 40    | 37         | 1            | 2  | 2    | 94                           | 35        | 11   | 205  | 1.23                 | 260.8 |

| TC TLOGSTVB         |     |     |       | Log Stock Table - MBF<br>Project: MORNOR |        |       |              |       |                                          |                    |     |     |       |       |       |       |       |       |       |
|---------------------|-----|-----|-------|------------------------------------------|--------|-------|--------------|-------|------------------------------------------|--------------------|-----|-----|-------|-------|-------|-------|-------|-------|-------|
| T04N R05W S31 T00MC |     |     |       |                                          |        |       |              |       |                                          | T04N R05W S31 T00M |     |     |       |       |       |       |       |       |       |
| Twp                 | Rge | Sec | Tract | Type                                     | Acres  | Plots | Sample Trees | Page  | 1                                        |                    |     |     |       |       |       |       |       |       |       |
| 04N                 | 05W | 31  | 00A2  | 00MC                                     | 114.00 | 35    | 100          | Date  | 1/7/2015                                 |                    |     |     |       |       |       |       |       |       |       |
|                     |     |     |       |                                          |        |       |              |       | Time                                     | 2:35:15PM          |     |     |       |       |       |       |       |       |       |
| Spp                 | S   | So  | Gr    | Log                                      | Gross  | % Def | Net          | % Spc | Net Volume by Scaling Diameter in Inches |                    |     |     |       |       |       |       |       |       |       |
|                     |     |     |       |                                          |        |       |              |       | 2-3                                      | 4-5                | 6-7 | 8-9 | 10-11 | 12-13 | 14-15 | 16-19 | 20-23 | 24-29 | 30-39 |
| DF                  | L   |     | 2M    | 36                                       | 2      |       | 2            | .0    |                                          |                    |     |     | 2     |       |       |       |       |       |       |
| DF                  | L   |     | 2M    | 40                                       | 35     |       | 35           | .6    |                                          |                    |     |     |       |       |       |       | 12    |       | 23    |
| DF                  | T   |     | CU    | 4                                        |        |       |              |       |                                          |                    |     |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 2M    | 16                                       | 25     |       | 25           | .4    |                                          |                    |     |     |       |       |       |       |       |       | 25    |
| DF                  | T   |     | 2M    | 22                                       | 47     |       | 47           | .8    |                                          |                    |     |     |       | 21    | 26    |       |       |       |       |
| DF                  | T   |     | 2M    | 40                                       | 4,591  | 1.0   | 4,546        | 75.0  |                                          |                    |     |     | 662   | 883   | 1909  | 959   | 84    |       | 50    |
| DF                  | T   |     | 3M    | 28                                       | 3      |       | 3            | .1    |                                          |                    | 3   |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 3M    | 32                                       | 57     |       | 57           | .9    |                                          |                    | 54  | 4   |       |       |       |       |       |       |       |
| DF                  | T   |     | 3M    | 34                                       | 73     |       | 73           | 1.2   |                                          |                    | 39  | 25  | 9     |       |       |       |       |       |       |
| DF                  | T   |     | 3M    | 36                                       | 46     |       | 46           | .8    |                                          |                    | 46  |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 3M    | 38                                       | 50     |       | 50           | .8    |                                          |                    | 42  | 8   |       |       |       |       |       |       |       |
| DF                  | T   |     | 3M    | 40                                       | 1,073  | .2    | 1,071        | 17.7  |                                          |                    | 132 | 354 | 545   | 39    |       |       |       |       |       |
| DF                  | T   |     | 4M    | 12                                       | 7      |       | 7            | .1    |                                          |                    | 7   |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 4M    | 14                                       | 3      |       | 3            | .1    |                                          |                    | 3   |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 4M    | 16                                       | 13     |       | 13           | .2    |                                          |                    | 13  |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 4M    | 18                                       | 8      |       | 8            | .1    |                                          |                    | 5   |     | 2     |       |       |       |       |       |       |
| DF                  | T   |     | 4M    | 20                                       | 11     |       | 11           | .2    |                                          |                    | 11  |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 4M    | 22                                       | 8      |       | 8            | .1    |                                          |                    | 8   |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 4M    | 24                                       | 15     |       | 15           | .3    |                                          |                    | 13  | 2   |       |       |       |       |       |       |       |
| DF                  | T   |     | 4M    | 26                                       | 14     |       | 14           | .2    |                                          |                    | 14  |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 4M    | 28                                       | 9      |       | 9            | .1    |                                          |                    | 9   |     |       |       |       |       |       |       |       |
| DF                  | T   |     | 4M    | 30                                       | 15     |       | 15           | .2    |                                          |                    | 15  |     |       |       |       |       |       |       |       |
| DF Totals           |     |     |       |                                          | 6,105  |       | 6,058        | 99.4  |                                          |                    | 414 | 393 | 557   | 702   | 903   | 1935  | 959   | 96    | 98    |
| RA                  | T   |     | R     |                                          |        |       |              |       |                                          |                    |     |     |       |       |       |       |       |       |       |
| RA                  | T   |     | R     | 15                                       | 5      |       | 5            | 12.7  |                                          |                    | 5   |     |       |       |       |       |       |       |       |
| RA                  | T   |     | R     | 22                                       | 2      |       | 2            | 6.3   |                                          |                    | 2   |     |       |       |       |       |       |       |       |
| RA                  | T   |     | R     | 23                                       | 3      |       | 3            | 7.8   |                                          |                    | 3   |     |       |       |       |       |       |       |       |
| RA                  | T   |     | R     | 25                                       | 8      |       | 8            | 20.9  |                                          |                    | 8   |     |       |       |       |       |       |       |       |
| RA                  | T   |     | R     | 30                                       | 10     |       | 10           | 25.4  |                                          |                    |     |     | 10    |       |       |       |       |       |       |
| RA                  | T   |     | R     | 38                                       | 10     |       | 10           | 26.9  |                                          |                    |     |     | 10    |       |       |       |       |       |       |
| RA Totals           |     |     |       |                                          | 38     |       | 38           | .6    |                                          |                    | 18  |     | 20    |       |       |       |       |       |       |
| Total All Species   |     |     |       |                                          | 6,143  |       | 6,096        | 100.0 |                                          |                    | 432 | 393 | 576   | 702   | 903   | 1935  | 959   | 96    | 98    |

| TC                  |        | TSTNDSUM |       |           |           |                |             |              |               |               |               |                |                |                       |                     |        | Stand Table Summary |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
|---------------------|--------|----------|-------|-----------|-----------|----------------|-------------|--------------|---------------|---------------|---------------|----------------|----------------|-----------------------|---------------------|--------|---------------------|-------|--|------------|--|--|--|--|--|--|--|--|--|--|--|
| Project             |        |          |       |           |           |                |             |              |               | MORNOR        |               |                |                |                       |                     |        |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| T04N R05W S31 T00MC |        |          |       |           |           |                |             |              |               |               |               |                |                |                       | T04N R05W S31 T00MC |        |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| Twp                 |        | Rge      |       | Sec       |           | Tract          |             | Type         |               |               | Acres         |                | Plots          |                       | Sample Trees        |        |                     | Page: |  | 1          |  |  |  |  |  |  |  |  |  |  |  |
| 04N                 |        | 05W      |       | 31        |           | 00A2           |             | 00MC         |               |               | 114.00        |                | 35             |                       | 100                 |        |                     | Date: |  | 01/07/2015 |  |  |  |  |  |  |  |  |  |  |  |
|                     |        |          |       |           |           |                |             |              |               |               |               |                |                |                       | Time:               |        | 2:35:14PM           |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| Spc                 | S<br>T | Sample   |       | Av        |           | Trees/<br>Acre | BA/<br>Acre | Logs<br>Acre | Average Log   |               | Tons/<br>Acre | Net            |                | Net<br>Bd.Ft.<br>Acre | T o t a l s         |        |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
|                     |        | DBH      | Trees | FF<br>16' | Ht<br>Tot |                |             |              | Net<br>Cu.Ft. | Net<br>Bd.Ft. |               | Cu.Ft.<br>Acre | Cu.Ft.<br>Acre |                       | Tons                | Cunits | MBF                 |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 12       | 1     | 88        | 83        | 3.125          | 2.45        | 6.25         | 10.8          | 45.0          | 1.92          | 67             | 281            | 218                   | 77                  | 32     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 13       | 1     | 87        | 95        | 2.662          | 2.45        | 5.32         | 14.1          | 55.0          | 2.14          | 75             | 293            | 243                   | 85                  | 33     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 14       | 3     | 89        | 112       | 6.887          | 7.36        | 13.77        | 20.0          | 91.7          | 7.84          | 275            | 1,263          | 893                   | 313                 | 144    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 15       | 2     | 89        | 109       | 4.000          | 4.91        | 8.00         | 22.8          | 105.0         | 5.20          | 183            | 840            | 593                   | 208                 | 96     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 16       | 3     | 89        | 118       | 5.273          | 7.36        | 12.30        | 24.0          | 105.7         | 8.41          | 295            | 1,301          | 959                   | 337                 | 148    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 18       | 3     | 89        | 139       | 4.166          | 7.36        | 12.50        | 28.2          | 126.7         | 10.05         | 353            | 1,583          | 1,146                 | 402                 | 180    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 19       | 4     | 88        | 138       | 4.986          | 9.82        | 14.96        | 30.8          | 137.5         | 13.13         | 461            | 2,057          | 1,497                 | 525                 | 234    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 20       | 4     | 86        | 127       | 4.500          | 9.82        | 12.37        | 33.6          | 145.5         | 11.85         | 416            | 1,800          | 1,351                 | 474                 | 205    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 21       | 6     | 89        | 135       | 6.122          | 14.72       | 18.37        | 37.8          | 177.2         | 19.76         | 693            | 3,255          | 2,253                 | 791                 | 371    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 22       | 11    | 89        | 137       | 10.226         | 27.00       | 29.75        | 43.1          | 195.3         | 36.54         | 1,282          | 5,810          | 4,165                 | 1,461               | 662    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 23       | 10    | 89        | 138       | 8.506          | 24.54       | 25.52        | 45.6          | 205.3         | 33.13         | 1,163          | 5,240          | 3,777                 | 1,325               | 597    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 24       | 7     | 89        | 142       | 5.468          | 17.18       | 16.40        | 51.6          | 240.5         | 24.12         | 846            | 3,945          | 2,750                 | 965                 | 450    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 25       | 6     | 88        | 154       | 4.320          | 14.72       | 15.12        | 50.9          | 242.4         | 21.95         | 770            | 3,664          | 2,502                 | 878                 | 418    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 26       | 9     | 88        | 149       | 5.991          | 22.09       | 18.64        | 61.3          | 293.9         | 32.56         | 1,143          | 5,478          | 3,712                 | 1,303               | 624    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 27       | 3     | 90        | 162       | 1.852          | 7.36        | 6.79         | 61.4          | 330.9         | 11.88         | 417            | 2,247          | 1,354                 | 475                 | 256    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 28       | 6     | 87        | 154       | 3.444          | 14.72       | 11.48        | 67.6          | 343.0         | 22.10         | 775            | 3,937          | 2,519                 | 884                 | 449    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 29       | 3     | 86        | 151       | 1.605          | 7.36        | 5.35         | 71.0          | 345.0         | 10.82         | 380            | 1,846          | 1,234                 | 433                 | 210    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 30       | 3     | 86        | 148       | 1.500          | 7.36        | 4.50         | 83.4          | 406.7         | 10.70         | 375            | 1,830          | 1,220                 | 428                 | 209    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 31       | 5     | 85        | 145       | 2.341          | 12.27       | 7.02         | 85.7          | 401.3         | 17.14         | 602            | 2,819          | 1,954                 | 686                 | 321    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 32       | 2     | 87        | 146       | .879           | 4.91        | 2.64         | 94.5          | 466.7         | 7.10          | 249            | 1,230          | 809                   | 284                 | 140    |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 35       | 1     | 90        | 147       | .367           | 2.45        | 1.10         | 116.7         | 623.3         | 3.66          | 129            | 687            | 418                   | 147                 | 78     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 38       | 1     | 89        | 147       | .312           | 2.45        | 1.25         | 91.5          | 535.0         | 3.25          | 114            | 667            | 371                   | 130                 | 76     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | T      | 41       | 1     | 89        | 152       | .268           | 2.45        | .80          | 164.5         | 926.7         | 3.76          | 132            | 744            | 429                   | 151                 | 85     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  |        | Totals   | 95    | 88        | 133       | 88.797         | 233.14      | 250.20       | 44.7          | 211.1         | 319.03        | 11,194         | 52,815         | 36,369                | 12,761              | 6,021  |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| RA                  | T      | 10       | 1     | 74        | 71        | 2.095          | 1.14        | 4.19         | 3.5           | 10.0          | .40           | 15             | 42             | 46                    | 17                  | 5      |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| RA                  | T      | 11       | 1     | 73        | 71        | 1.732          | 1.14        | 3.46         | 6.6           | 20.0          | .63           | 23             | 69             | 71                    | 26                  | 8      |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| RA                  | T      | 18       | 1     | 74        | 77        | .647           | 1.14        | 1.29         | 26.6          | 85.0          | .95           | 34             | 110            | 108                   | 39                  | 13     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| RA                  | T      | 20       | 1     | 74        | 84        | .524           | 1.14        | 1.05         | 36.4          | 105.0         | 1.05          | 38             | 110            | 120                   | 44                  | 13     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| RA                  |        | Totals   | 4     | 74        | 73        | 4.998          | 4.57        | 10.00        | 11.0          | 33.1          | 3.03          | 110            | 331            | 345                   | 125                 | 38     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  | L      | 49       | 1     | 90        | 142       | .087           | 1.14        | .26          | 226.0         | 1246.7        | 1.69          | 59             | 326            | 192                   | 67                  | 37     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| DF                  |        | Totals   | 1     | 90        | 142       | .087           | 1.14        | .26          | 226.0         | 1246.7        | 1.69          | 59             | 326            | 192                   | 67                  | 37     |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |
| Totals              |        | 100      |       | 88        | 130       | 93.882         | 238.86      | 260.46       | 43.6          | 205.3         | 323.74        | 11363          | 53,473         | 36,907                | 12,954              | 6,096  |                     |       |  |            |  |  |  |  |  |  |  |  |  |  |  |

| TC PSTATS                                                        |      |       | PROJECT STATISTICS |            |                   |                             |                            |                 | PAGE         | 1              |              |
|------------------------------------------------------------------|------|-------|--------------------|------------|-------------------|-----------------------------|----------------------------|-----------------|--------------|----------------|--------------|
|                                                                  |      |       | PROJECT            | MORNOR     |                   |                             | DATE                       | 1/7/2015        |              |                |              |
| TWP                                                              | RGE  | SC    | TRACT              | TYPE       |                   | ACRES                       | PLOTS                      | TREES           | CuFt         | BdFt           |              |
| 04N                                                              | 05   | 31    | 00A1               | 00MC       |                   | 184.00                      | 57                         | 325             | S            | W              |              |
| 04N                                                              | 05W  | 31    | 00A2               | 00MC       |                   |                             |                            |                 |              |                |              |
|                                                                  |      |       | PLOTS              | TREES      | TREES<br>PER PLOT | ESTIMATED<br>TOTAL<br>TREES | PERCENT<br>SAMPLE<br>TREES |                 |              |                |              |
| TOTAL                                                            |      |       | 57                 | 325        | 5.7               |                             |                            |                 |              |                |              |
| CRUISE                                                           |      |       | 29                 | 160        | 5.5               | 16,974                      | .9                         |                 |              |                |              |
| DBH COUNT                                                        |      |       |                    |            |                   |                             |                            |                 |              |                |              |
| REFOREST                                                         |      |       |                    |            |                   |                             |                            |                 |              |                |              |
| COUNT                                                            |      |       | 27                 | 163        | 6.0               |                             |                            |                 |              |                |              |
| BLANKS                                                           |      |       | 1                  |            |                   |                             |                            |                 |              |                |              |
| 100 %                                                            |      |       |                    |            |                   |                             |                            |                 |              |                |              |
| STAND SUMMARY                                                    |      |       |                    |            |                   |                             |                            |                 |              |                |              |
| SAMPLE<br>TREES                                                  |      |       | TREES<br>/ACRE     | AVG<br>DBH | BOLE<br>LEN       | REL<br>DEN                  | BASAL<br>AREA              | GROSS<br>BF/AC  | NET<br>BF/AC | GROSS<br>CF/AC | NET<br>CF/AC |
| DOUG FIR-L                                                       |      |       | 2                  | .1         | 56.4              | 149                         | 0.2                        | 1.4             | 462          | 462            | 78           |
| DOUG FIR-T                                                       |      |       | 150                | 87.2       | 21.5              | 130                         | 47.5                       | 220.5           | 48,388       | 47,830         | 10,351       |
| R ALDER-T                                                        |      |       | 6                  | 4.4        | 13.3              | 71                          | 1.2                        | 4.2             | 289          | 289            | 99           |
| WHEMLOCK-L                                                       |      |       | 2                  | .5         | 21.5              | 117                         | 0.3                        | 1.4             | 248          | 248            | 59           |
| TOTAL                                                            |      |       | 160                | 92.2       | 21.3              | 127                         | 49.3                       | 227.5           | 49,388       | 48,829         | 10,588       |
| CONFIDENCE LIMITS OF THE SAMPLE                                  |      |       |                    |            |                   |                             |                            |                 |              |                |              |
| 68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR |      |       |                    |            |                   |                             |                            |                 |              |                |              |
| CL                                                               | 68.1 | COEFF | SAMPLE TREES - BF  |            |                   |                             |                            | # OF TREES REQ. |              | INF. POP.      |              |
| SD:                                                              | 1.0  | VAR.% | S.E.%              | LOW        | AVG               | HIGH                        |                            | 5               | 10           | 15             |              |
| DOUG FIR-L                                                       |      |       | 63.0               | 59.0       | 2,766             | 6,745                       | 10,724                     |                 |              |                |              |
| DOUG FIR-T                                                       |      |       | 56.1               | 4.6        | 678               | 710                         | 743                        |                 |              |                |              |
| R ALDER-T                                                        |      |       | 80.6               | 35.9       | 61                | 95                          | 129                        |                 |              |                |              |
| WHEMLOCK-L                                                       |      |       | 23.3               | 21.8       | 356               | 455                         | 554                        |                 |              |                |              |
| TOTAL                                                            |      |       | 112.8              | 8.9        | 692               | 760                         | 827                        |                 | 508          | 127            | 56           |
| CL                                                               | 68.1 | COEFF | SAMPLE TREES - CF  |            |                   |                             |                            | # OF TREES REQ. |              | INF. POP.      |              |
| SD:                                                              | 1.0  | VAR.% | S.E.%              | LOW        | AVG               | HIGH                        |                            | 5               | 10           | 15             |              |
| DOUG FIR-L                                                       |      |       | 55.7               | 52.1       | 535               | 1,118                       | 1,700                      |                 |              |                |              |
| DOUG FIR-T                                                       |      |       | 48.7               | 4.0        | 145               | 151                         | 157                        |                 |              |                |              |
| R ALDER-T                                                        |      |       | 78.7               | 35.0       | 21                | 32                          | 44                         |                 |              |                |              |
| WHEMLOCK-L                                                       |      |       | 14.1               | 13.2       | 94                | 109                         | 123                        |                 |              |                |              |
| TOTAL                                                            |      |       | 88.9               | 7.0        | 147               | 158                         | 169                        |                 | 315          | 79             | 35           |
| CL                                                               | 68.1 | COEFF | TREES/ACRE         |            |                   |                             |                            | # OF PLOTS REQ. |              | INF. POP.      |              |
| SD:                                                              | 1.0  | VAR.% | S.E.%              | LOW        | AVG               | HIGH                        |                            | 5               | 10           | 15             |              |
| DOUG FIR-L                                                       |      |       | 559.8              | 74.1       | 0                 | 0                           | 0                          |                 |              |                |              |
| DOUG FIR-T                                                       |      |       | 48.6               | 6.4        | 82                | 87                          | 93                         |                 |              |                |              |
| R ALDER-T                                                        |      |       | 573.4              | 75.9       | 1                 | 4                           | 8                          |                 |              |                |              |
| WHEMLOCK-L                                                       |      |       | 529.7              | 70.1       | 0                 | 1                           | 1                          |                 |              |                |              |
| TOTAL                                                            |      |       | 44.3               | 5.9        | 87                | 92                          | 98                         |                 | 78           | 20             | 9            |
| CL                                                               | 68.1 | COEFF | BASAL AREA/ACRE    |            |                   |                             |                            | # OF PLOTS REQ. |              | INF. POP.      |              |
| SD:                                                              | 1.0  | VAR.% | S.E.%              | LOW        | AVG               | HIGH                        |                            | 5               | 10           | 15             |              |
| DOUG FIR-L                                                       |      |       | 529.1              | 70.0       | 0                 | 1                           | 2                          |                 |              |                |              |
| DOUG FIR-T                                                       |      |       | 43.9               | 5.8        | 208               | 221                         | 233                        |                 |              |                |              |
| R ALDER-T                                                        |      |       | 560.5              | 74.2       | 1                 | 4                           | 7                          |                 |              |                |              |
| WHEMLOCK-L                                                       |      |       | 529.1              | 70.0       | 0                 | 1                           | 2                          |                 |              |                |              |
| TOTAL                                                            |      |       | 39.1               | 5.2        | 216               | 228                         | 239                        |                 | 61           | 15             | 7            |
| CL                                                               | 68.1 | COEFF | NET BF/ACRE        |            |                   |                             |                            | # OF PLOTS REQ. |              | INF. POP.      |              |
| SD:                                                              | 1.0  | VAR.% | S.E.%              | LOW        | AVG               | HIGH                        |                            | 5               | 10           | 15             |              |
| DOUG FIR-L                                                       |      |       | 533.3              | 70.6       | 136               | 462                         | 788                        |                 |              |                |              |
| DOUG FIR-T                                                       |      |       | 45.0               | 6.0        | 44,980            | 47,830                      | 50,680                     |                 |              |                |              |
| R ALDER-T                                                        |      |       | 575.1              | 76.1       | 69                | 289                         | 509                        |                 |              |                |              |
| WHEMLOCK-L                                                       |      |       | 533.0              | 70.5       | 73                | 248                         | 423                        |                 |              |                |              |

|            |      |                    |       |       |                  |        |                 |      |           |          |
|------------|------|--------------------|-------|-------|------------------|--------|-----------------|------|-----------|----------|
| TC PSTATS  |      | PROJECT STATISTICS |       |       |                  |        |                 |      | PAGE      | 2        |
|            |      | PROJECT MORNOR     |       |       |                  |        |                 |      | DATE      | 1/7/2015 |
| TWP        | RGE  | SC                 | TRACT | TYPE  | ACRES            | PLOTS  | TREES           | CuFt | BdFt      |          |
| 04N        | 05   | 31                 | 00A1  | 00MC  | 184.00           | 57     | 325             | S    | W         |          |
| 04N        | 05W  | 31                 | 00A2  | 00MC  |                  |        |                 |      |           |          |
| CL         | 68.1 |                    | COEFF |       | NET BF/ACRE      |        | # OF PLOTS REQ. |      | INF. POP. |          |
| SD:        | 1.00 |                    | VAR.  | S.E.% | LOW              | AVG    | HIGH            | 5    | 10        | 15       |
| TOTAL      |      |                    | 42.5  | 5.6   | 46,086           | 48,829 | 51,573          | 72   | 18        | 8        |
| CL         | 68.1 |                    | COEFF |       | NET CUFT FT/ACRE |        | # OF PLOTS REQ. |      | INF. POP. |          |
| SD:        | 1.0  |                    | VAR.% | S.E.% | LOW              | AVG    | HIGH            | 5    | 10        | 15       |
| DOUG FIR-L |      |                    | 530.1 | 70.2  | 23               | 78     | 133             |      |           |          |
| DOUG FIR-T |      |                    | 44.3  | 5.9   | 9,744            | 10,351 | 10,959          |      |           |          |
| R ALDER-T  |      |                    | 566.3 | 74.9  | 25               | 99     | 173             |      |           |          |
| WHEMLOCK-L |      |                    | 529.8 | 70.1  | 18               | 59     | 101             |      |           |          |
| TOTAL      |      |                    | 41.2  | 5.4   | 10,012           | 10,588 | 11,165          | 68   | 17        | 8        |

**VOLUME SUMMARY**

(Shown in MBF)

**Mor Nor Wolf****Sale No. 341-15-19****December 2014****AREA 1: MC (70 ACRES)**

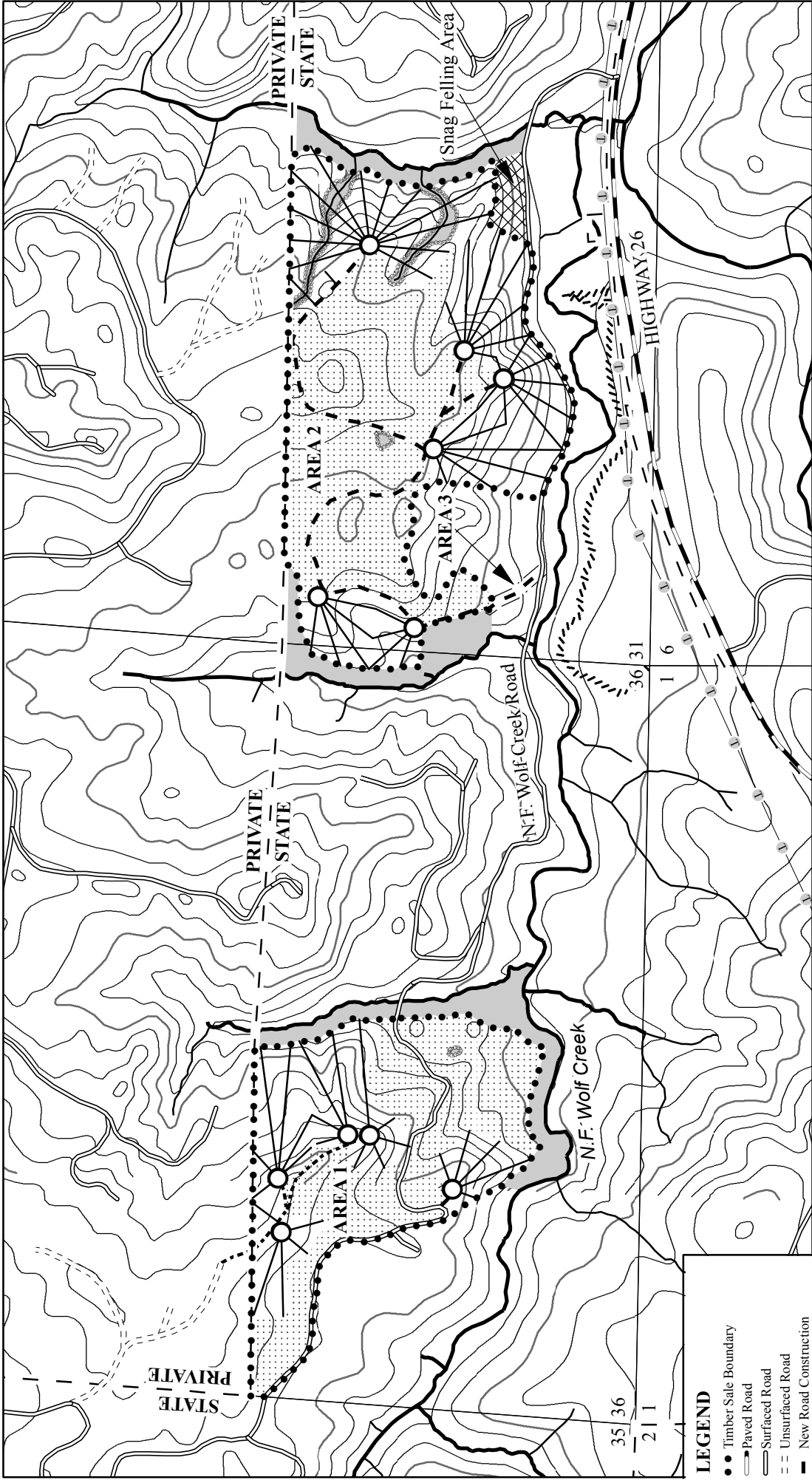
| <b>SPECIES</b> |                  | <b>2 SAW</b> | <b>3 SAW</b> | <b>4 SAW</b> | <b>Camp Run</b> | <b>TOTAL</b> |
|----------------|------------------|--------------|--------------|--------------|-----------------|--------------|
| Douglas-fir    | Cruise Volume    | 2,065        | 646          | 69           | 0               | 2,780        |
|                | Hidden D&B (2%)  | (41)         | (13)         | (1)          | ()              | (55)         |
|                | <b>NET TOTAL</b> | 2,024        | 633          | 68           | 0               | 2,725        |
|                | % of Total       | 74           | 23           | 2            | 0               |              |
| Red Alder      | Cruise Volume    | 0            | 0            | 0            | 17              | 17           |
|                | Hidden D&B (2%)  | ()           | ()           | ()           | ()              | ()           |
|                | <b>NET TOTAL</b> | 0            | 0            | 0            | 17              | 17           |
|                | % of Total       | 0            | 0            | 0            | 0               |              |

**AREA 2: MC & AREA: 3 R/W (114 ACRES)**

| <b>SPECIES</b> |                  | <b>2 SAW</b> | <b>3 SAW</b> | <b>4 SAW</b> | <b>Camp Run</b> | <b>TOTAL</b> |
|----------------|------------------|--------------|--------------|--------------|-----------------|--------------|
| Douglas-fir    | Cruise Volume    | 4,618        | 1,301        | 102          |                 | 6,021        |
|                | Hidden D&B (2%)  | (92)         | (26)         | (2)          |                 | (120)        |
|                | <b>NET TOTAL</b> | 4,526        | 1,275        | 100          |                 | 5,901        |
|                | % of Total       | 77           | 22           | 2            |                 |              |
| Red Alder      | Cruise Volume    | 0            | 0            | 0            | 43              | 43           |
|                | Hidden D&B (2%)  | ()           | ()           | ()           | (1)             | (1)          |
|                | <b>NET TOTAL</b> | 0            | 0            | 0            | 42              | 42           |
|                | % of Total       | 0            | 0            | 0            | 0               |              |

**SALE TOTAL**

| <b>SPECIES</b> |  | <b>2 SAW</b> | <b>3 SAW</b> | <b>4 SAW</b> | <b>Camp Run</b> | <b>TOTAL</b> |
|----------------|--|--------------|--------------|--------------|-----------------|--------------|
| Total          |  | 6,550        | 1,908        | 168          | 59              | 8,685        |



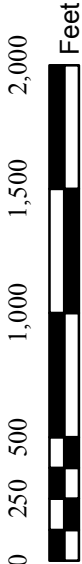
**LEGEND**

- • Timber Sale Boundary
- Paved Road
- Surfaced Road
- - - Unsurfaced Road
- - - New Road Construction
- - - Non-Project Road Construction
- - - Posted Right of Way Boundary
- Type F Stream
- Type N Stream
- - - Posted Stream Buffer Boundary
- Stream Buffer
- Cable Landing
- Tractor Landing
- Cable Yarding Area
- • • • • Tractor Yarding Area
- ✕ Snag Felling Area
- ODF Ownership Boundary
- Sections
- 400 Foot Contour Band
- 80 Foot Contour Band
- Electric Transmission Lines
- Recreation Trail

**LOGGING PLAN**

FOR TIMBER SALE CONTRACT # 341-15-19  
MOR NOR WOLF  
PORTIONS OF SECTION 31, T4N, R5W, W.M.  
COLUMBIA COUNTY, OREGON &  
PORTIONS OF SECTION 36, T4N, R6W, W.M.  
CLATSOP COUNTY, OREGON.

Forest Grove District GIS  
December, 2014  
This product is for informational use and may not be  
suitable for legal, engineering, or surveying purposes.



1:12,000

1 inch = 1,000 feet

**APPROXIMATE NET ACRES**

|        | TRACTOR | CABLE |
|--------|---------|-------|
| AREA 1 | 39      | 31    |
| AREA 2 | 58      | 55    |
| AREA 3 | 1       | 0     |
| TOTAL  | 98      | 86    |